

National Geodetic Survey Director's Update to the HSRP

Brad Kearse, NGS Deputy Director
March 5, 2024
HSRP Meeting San Pedro, CA



HYDROGRAPHIC SERVICES REVIEW PANEL

Outline

- NSRS Modernization
- GRAV-D Updates
- Foundation CORS Updates
- VDatum Updates
- Coastal Mapping Updates
- Geodesy Crisis
 - Geodesy Community of Practice
 - Geodesy Integration Plan
 - Geospatial Modeling Grant
 - Pilot Internship Program
- New Strategic Plan Underway
- Leadership Transition



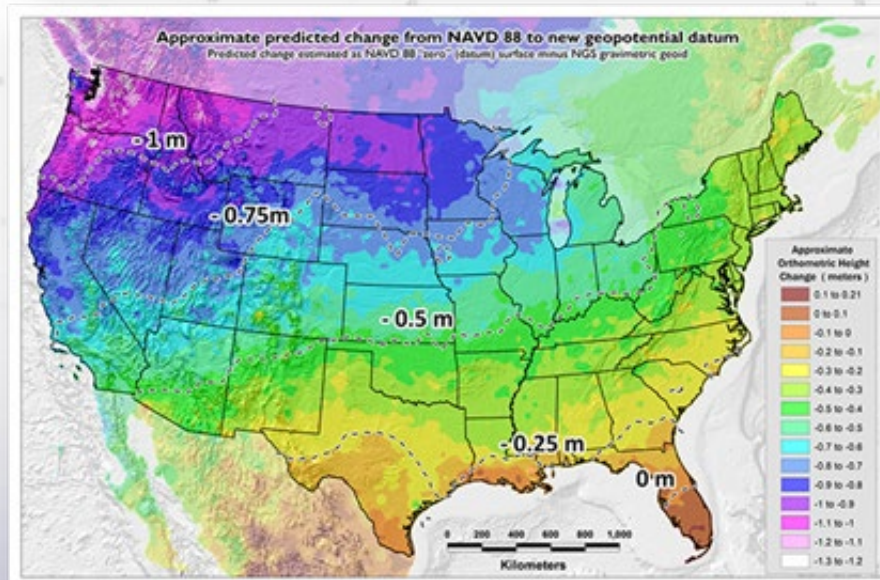
Benefits of Modernizing the NSRS

Why Modernize?

- **Current Datums** were defined *before* GPS technology and rely on old tech & physical survey marks in the ground

Modernization will:

- Better align all geospatial data
- Improve **accuracy, access, and alignment** of our positioning systems
- Provide ~\$8.7 B in benefits to the nation over 10 years, more for early adopters
- Enable better alignment of NOAA data to support a Climate Ready Nation
- Provide more Equitable Access across $\frac{1}{4}$ of the Earth

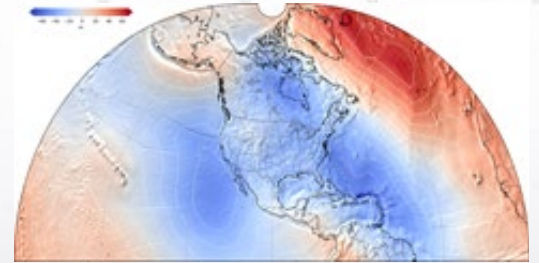


NSRS Modernization Timeline

Beta release of NSRS Modernization data and a limited set of tools in **mid-2025**, for at least 6 months of beta testing, FGCS approval and adoption in **2026**

Recent Announcements:

- New 2024 NGS Research Plan plots course into future
- Alpha release of GEOID2022 is now available



Mid - Late 2024:

- Beta release of CORS Station Pages for Data Delivery System
- Beta Reference Epoch Coordinates (REC) Adjustment — the first set of new coordinates on 100,000+ marks
- Dynamic heights from GNSS tool — for use in water management

SGEOID2022 Alpha geoid undulation



NSRS Modernization Timeline

Mid - Late 2024:

- ITRF2020 CORS Coordinate Functions to describe the dynamic nature of how stations in NOAA CORS Network move over time
- VDatum release for West Gulf coast by 6/2024
- Contract work begins on Foundation CORS (with BIL funds)
- GRAV-D reflights for Gulf Coast and other specific lines



Mid 2024 - Mid 2025: One year roll-out of beta products, “domino style,” on beta website

Mid 2025: Official testing of modernized NSRS continues for at least 6 months

Early 2026: FGCS vote to make the modernized NSRS the official NSRS



Outreach Events

NGS has several upcoming events for sharing information to stakeholders about NSRS Modernization:

- National Science Teaching Association (NSTA) Workshop (Denver, CO March 19–24)
- National States Geographic Information Council (NSGIC) Mid-Year (DC Area March 24–28)
- Utility Engineering and Surveying Institute (UESI) — NSRS Mod Mini-Session (Corvallis, OR June 2–4)

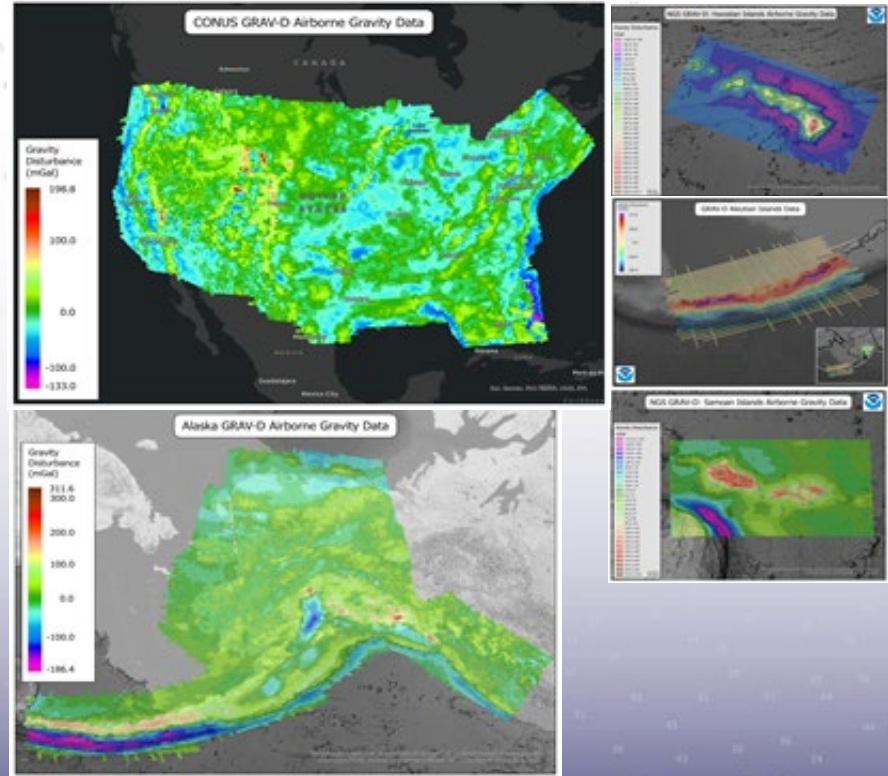
GRAV-D Update

Target Area is **100% Complete**:

- In Calendar year 2023 we completed data collection in American Samoa, Hawaii, the Aleutian Islands and in CONUS!
Complete GRAV-D data set is now with the Geoid team for NAPGD2022 production.
- NGS continues to collect data to improve the dataset

Up Next:

- Refly select regions in FY24.
- Monitor geoid change with Geoid Monitoring Service (GeMS).
- Develop Terrestrial Gravity campaign to drive down errors in gravity field in select regions.



Foundation CORS Update



New FCORS — 15 active projects

12 of 15 recons completed, designs underway,
Installations starting fall 2024



Existing CORS Upgrades

Recons start May 2024 (collocated w/ tide stations)
Upgrades start Fall 2024

Fairbanks, AK

Cold Bay, AK

Brewster, WA

Midway

Wake

American Samoa



Upgrade existing Great
Lakes CORS

Horn Point, MD

Woodford, VA

Fan Mountain, VA

Virginia Key / Miami, FL

Saint Croix, USVI

Kitt Peak, AZ

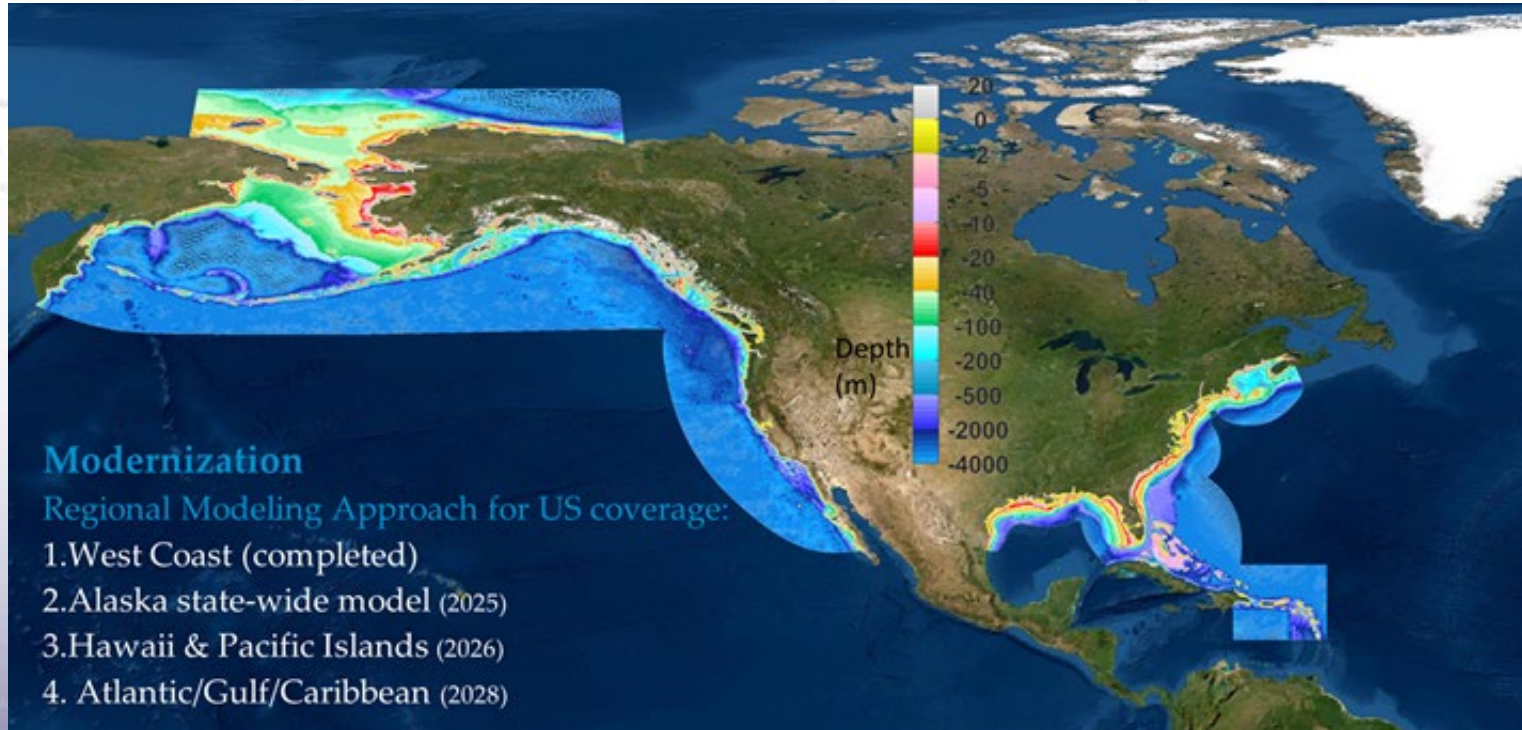
Pie Town, NM

Apache Point, NM

Fort Davis, TX



VDatum Models: Coverage, Projects, Plans



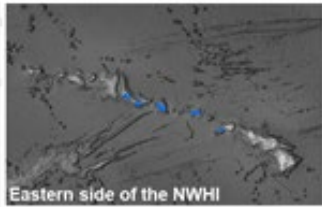
Coastal Mapping Highlights

In FY23 delivered 11,500 miles of shoreline, updated shoreline for 59 ports, and provided 4597 mi² of nearshore bathymetry all for updating ~272 NOAA ENC's and many other applications. Shoreline Mapping Services IDIQ contract supports the Coastal Mapping Program, Gravity for the Redefinition of the American Vertical Datum (GRAV-D), VDatum, and Foundation CORS.

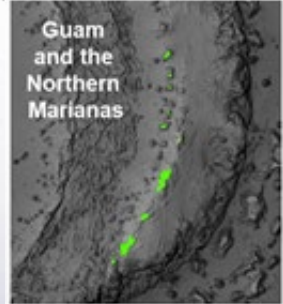
- \$40M, five-year contract was renewed in 2020. Re-compete for 2025 underway
- Ceiling raised in FY23 to \$114M
- Awarded \$28.56M in FY23 (IIJA/BIL, Hx Ian/Merbok supplemental, Shoreline Mapping, GRAV-D)
- FY24 IIJA/BIL, Hx Idalia supplemental, Shoreline Mapping, GRAV-D, Foundation CORS ***all pending FY24 Appropriation***



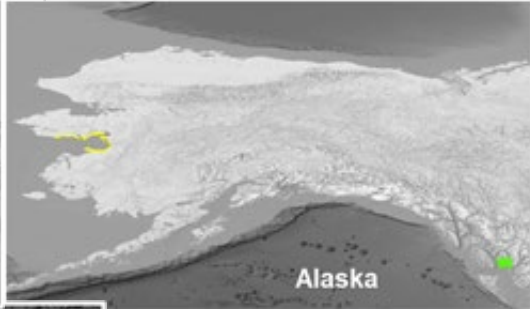
Topobathy Projects



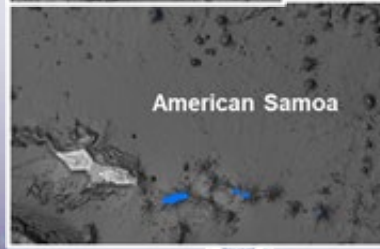
Eastern side of the NWHI



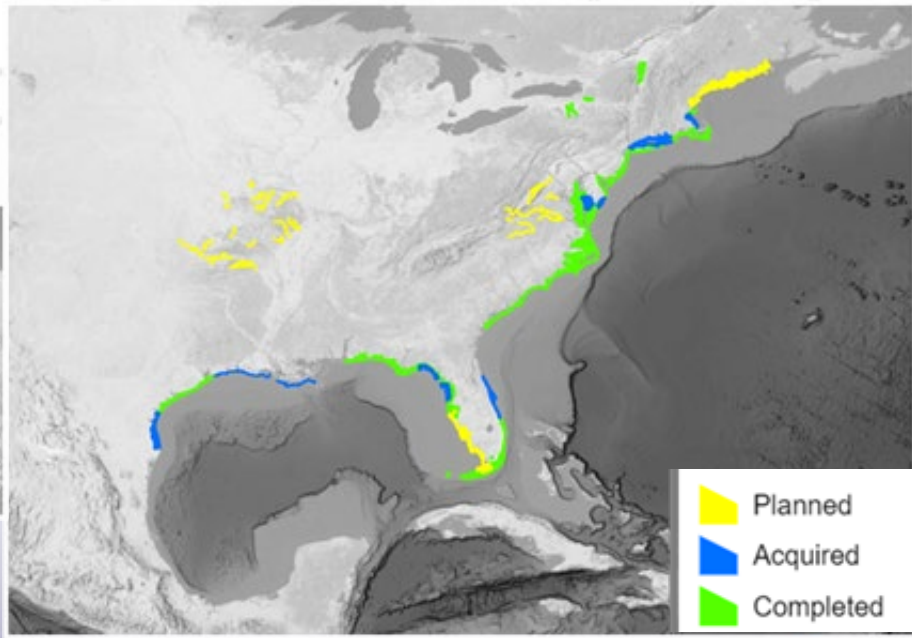
Guam and the Northern Marianas



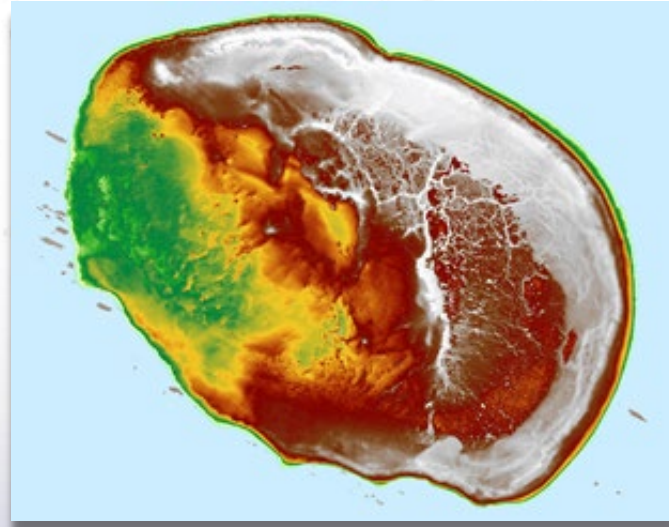
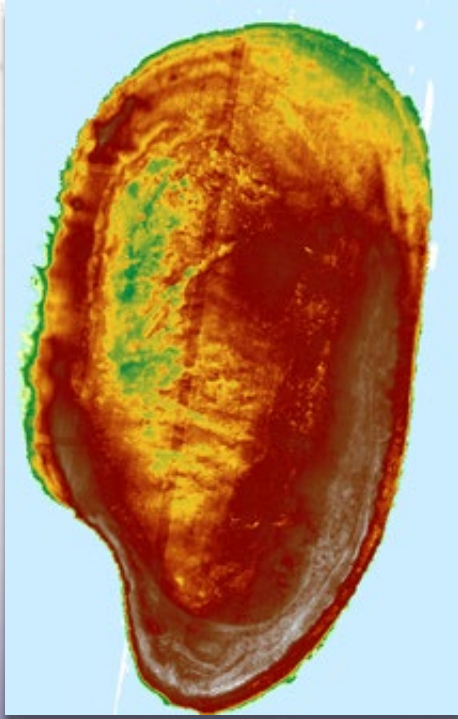
Alaska



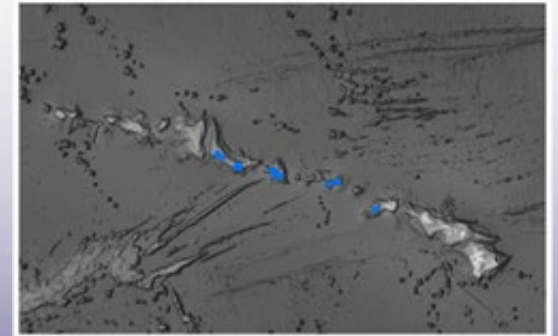
American Samoa



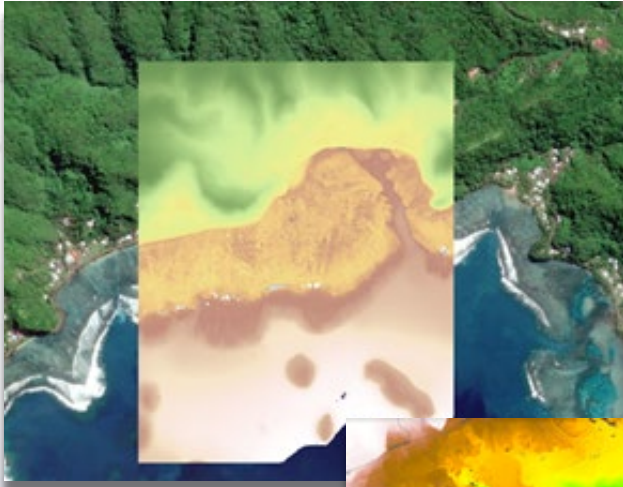
Papahānaumokuākea Marine National Monument (*French Frigate Shoals Acquired!*)



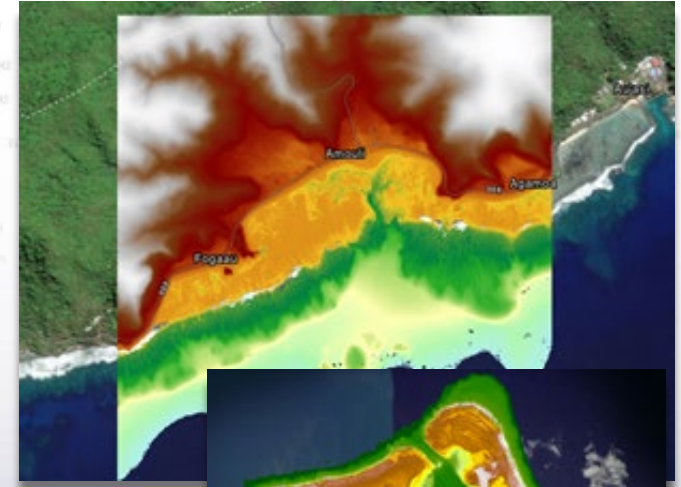
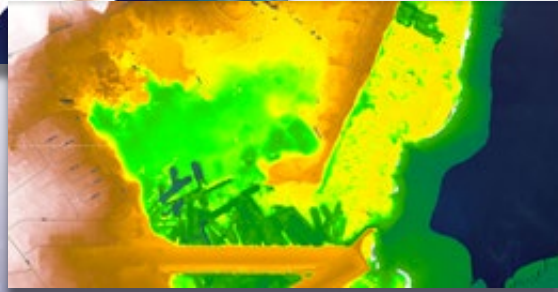
Quicklook
Coverage
Rasters



American Samoa

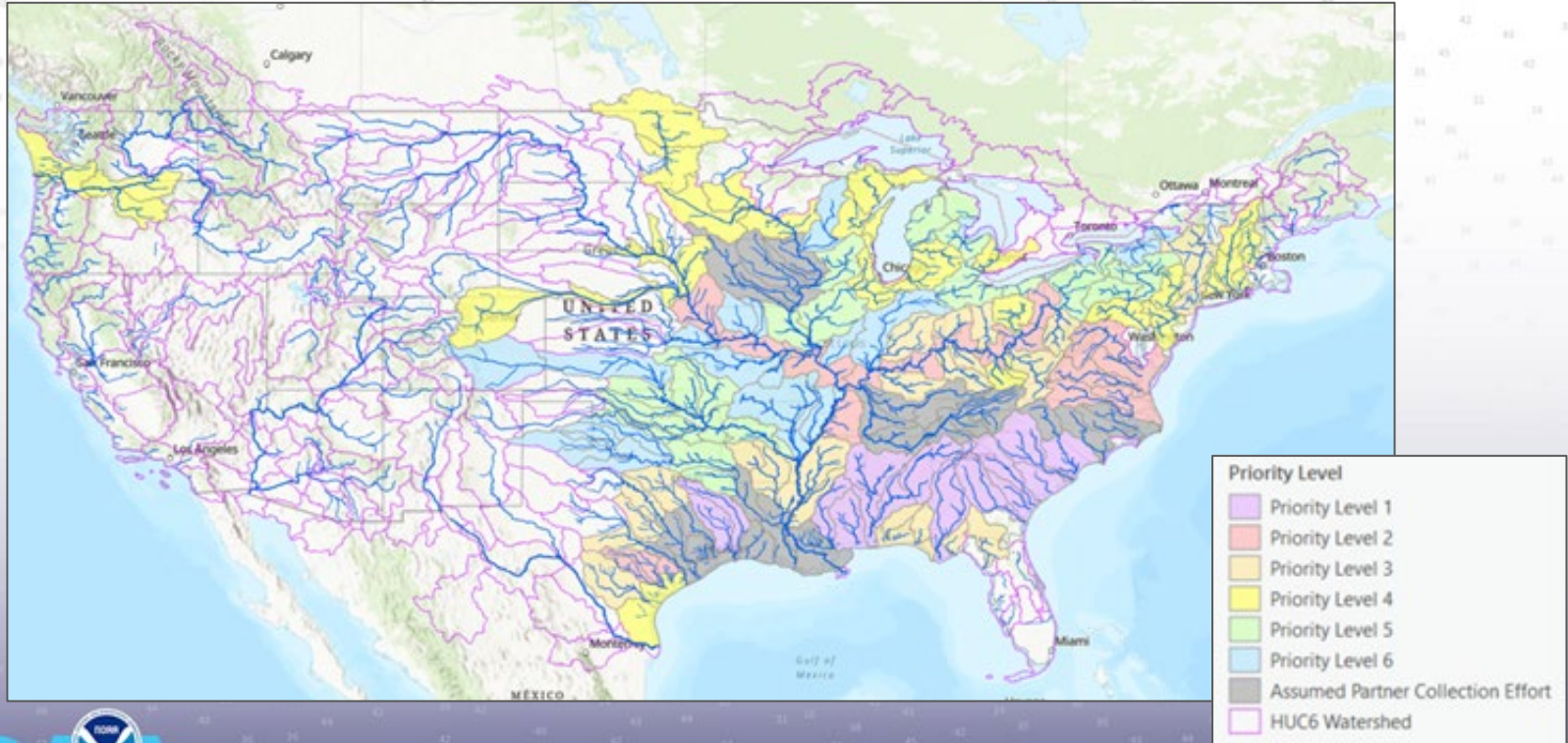


Nu'uuli Pala
Lagoon



Rose Atoll

National Water Center Priorities Areas for Topobathy Lidar Collection




FY22 BIL Updates



Florida Big Bend Offshore

A grayscale map of the Florida Big Bend region with a blue highlighted area along the coast.



Maine/New Hampshire


A grayscale map of the Maine and New Hampshire coastline with a blue highlighted area along the coast.



Southern Texas

A grayscale map of the southern Texas coastline with a blue highlighted area along the coast.

- Acquisition Completed!
- 3 of 4 projects have data entering our QA Phase

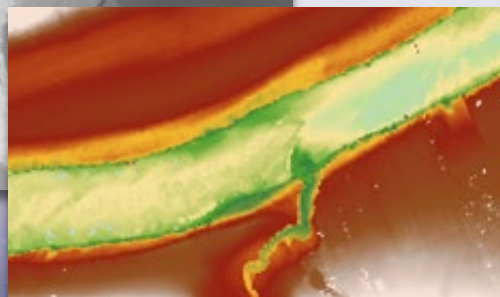
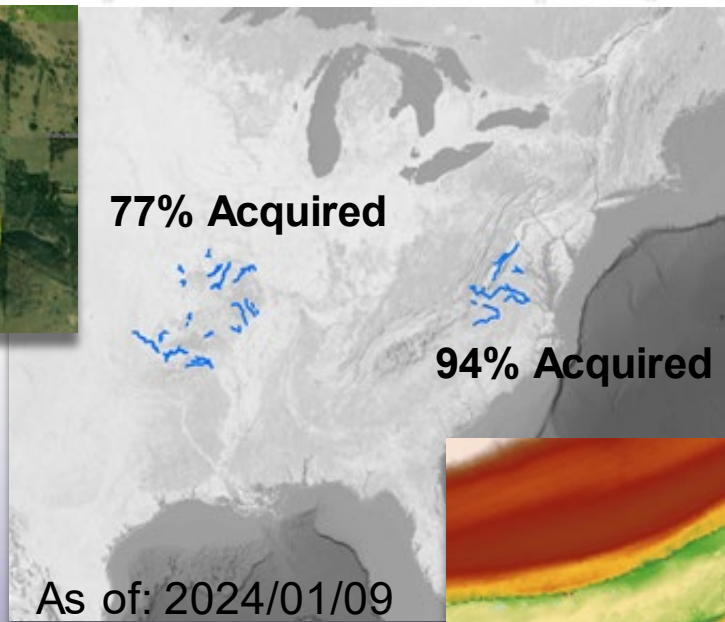


Maryland/Virginia

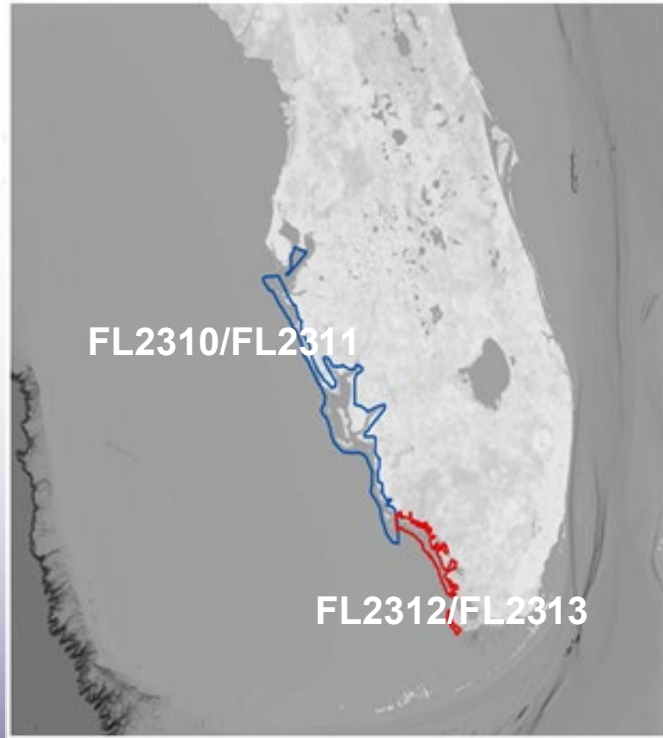
A grayscale map of the Maryland and Virginia coastline with a blue highlighted area along the coast.



FY23 BIL National Water Center Riverine Support



Hurricane Ian Supplemental



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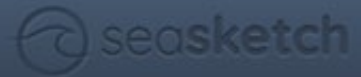
Typhoon Merbok

- USGS \$6.39M for topo lidar in Typhoon Merbok Disaster Supplemental
- NOAA/USGS combined requirements for Norton Sound and expanded existing NOAA project
- MOA leveraged NOAA contract for both imagery and topo lidar signed May 4, 2023
- Coastal topography, modeling, shoreline products planned



U.S. Mapping Coordination

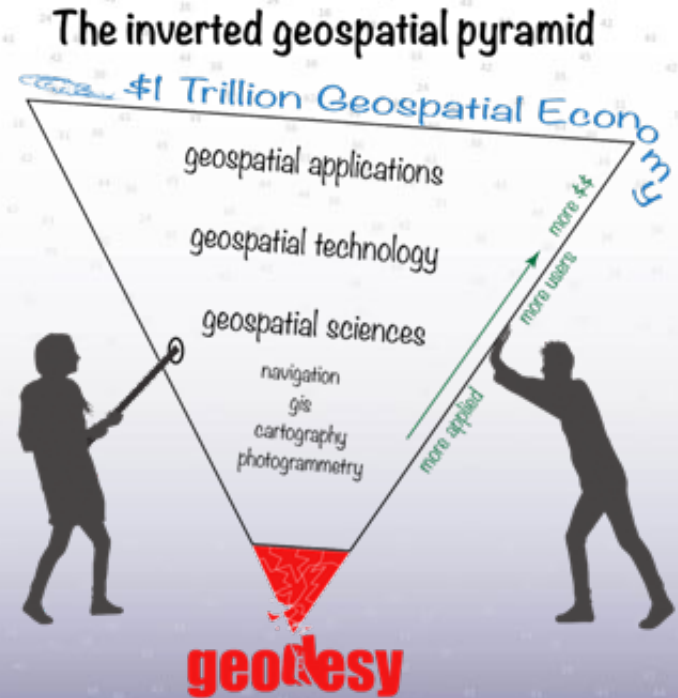
A Collaboration Site for Mapping Data Acquisition



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Addressing the Geodesy Crisis

- Geodesy Community of Practice
- Geospatial Modeling Grants
- Undergraduate Internship Program Pilot



The entire geospatial economy is supported by geodesy!



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Geodesy Community of Practice Update

Participants:

- National Geospatial-Intelligence Agency (NGA), Office of Geomatics
- NOAA, National Geodetic Survey (NGS)
- National Aeronautics and Space Administration (NASA)
- Department of Interior, United States Geological Survey (USGS)

Met in person twice so far. Meetings planned:

- April 2024: CoP Spring Working Group Leads meeting at NASA HQ in DC
- October 2024: CoP Fall Summit, in Boulder, CO

Technical Working Group Synergistic Topics

Data Sharing
Equipment Sharing
Software Sharing
Production Collaboration
Modeling Collaboration
Capabilities Enhancements (Developing Software, Developing Hardware, Enhancing Processes)
Data Standards Development & Cooperation
Certification Program(s)
Professional Training/Cross Training/Detail Assignments
Cooperative Agency Research Opportunities
Opportunities to Link and Leverage National and International Geodesy Forums



Geospatial Modeling Grants

- NGS awarded ~ \$4 million in grant funding in response to the Geospatial Modeling Grant.
- Projects will directly address the nationwide deficiency of geodesists.
- In addition, these projects will develop tools and models to advance the modernization of the National Spatial Reference System (NSRS)
- PI's from Scripps and Oregon State at HSRP session on March 7th

UC San Diego



SCRIPPS INSTITUTION OF
OCEANOGRAPHY



MICHIGAN STATE
UNIVERSITY



Oregon State
University

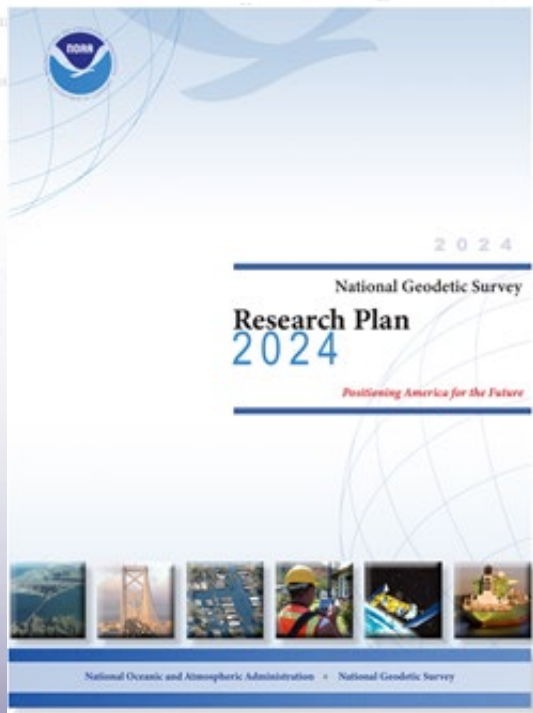
Undergraduate Internship Program Pilot

- Hiring 4 Pathways interns from the Chesapeake, VA area
- Coordinated effort between NGS, CO-OPS, and OCS
- Program will hire additional interns each year, and possibly branch out to other locations in the future



The screenshot shows the National Geodetic Survey (NGS) website. At the top left is the NOAA logo. The main header reads "National Geodetic Survey" with the tagline "Positioning America for the Future". Below the header is a navigation menu with links for "NGS Home", "About NGS", "Data & Imagery", "Tools", "Surveys", "Science & Education", and a search bar. The main content area is titled "National Geodetic Survey: Student Opportunities" and includes sections for "Education Opportunities", "Student Opportunities", "Grant Opportunities", and "Contact Us". The "Student Opportunities" section is expanded to show "The Pathways Program" and an "Overview" section. The overview text states: "NOAA's National Geodetic Survey, Center for Operational Oceanographic Products and Services (CO-OPS), and Office of Coast Survey (OCS) are offering students and recent graduates paid opportunities to explore Federal careers while still in school. NGS, CO-OPS, and OCS provide unique but related data and products to assist with coastal mapping, understanding water levels, and providing the foundational geospatial infrastructure for a wide variety of activities. These agencies draw from a talent pool that is extremely diverse, with needs for oceanographers, data scientists, engineers, GIS specialists, geodesists, land surveyors, programmers, and remote sensing specialists." To the right of the text is a photograph of a person using a yellow surveying instrument on a boat. Below the overview is a "Program Details" section which states: "Students or recent graduates selected for the Pathways Program will perform on-the-job training assignments as a student trainee in the Pathways Program. This Program is designed to provide opportunities to work in agencies and explore Federal careers while still in school and while getting paid for the work performed."

New Research and Strategic Plans



NGS recently released a new Research Plan and is currently working on an updated Strategic Plan that should be available by the end of the calendar year.



NGS Leadership Transition

- Juliana Blackwell is retiring on March 31, 2024
- Selection process for a new Director is underway
- Beginning April 1, 2024:
 - Brad Kearse will be acting NGS Director
 - Brett Howe will be acting NGS Deputy Director
- **New** NGS Operations Director is CDR Peter Freeman
- **New** Division Chief Positions to be filled in the coming months (M&B, Systems Development Division)





Thank You.

Questions?



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